

TURRITOPSOIDES BREHMERI, A NEW GENUS AND
SPECIES OF ATHECATE HYDROID FROM
BELIZE (HYDROZOA: CLAVIDAE)

Dale R. Calder

Abstract.—*Turritopsoides brehmeri*, n. gen., n. sp., is described from specimens collected on turtlegrass (*Thalassia*) in a mangrove system at Twin Cays, Belize, Central America. The colony form of *T. brehmeri* is stolonial, with well developed hydranth pedicels having a distinct sheath of perisarc enclosing a narrower tube of coenosarc. Hydranths are cylindrical and elongate, with numerous scattered filiform tentacles at the distal end. This newly-discovered hydroid differs from other representatives of the family Clavidae in colony form and in the location and characteristics of the gonophores, which are fixed sporosacs arising singly from the hydrorhiza and pedicels.

Field studies of the hydroid fauna of a Caribbean mangrove system were conducted at Twin Cays, a pair of mangrove islands 15 km east of Dangriga, Belize, during winter 1987. Amongst material collected in a small cove, known as "The Lair," were specimens at first thought to be the common and widespread athecate species *Turritopsis nutricula* McCrady, 1859a. Unlike *T. nutricula*, however, the gonophores of this hydroid are fixed sporosacs instead of free medusae; moreover, they arise from the hydrorhiza or hydranth pedicels instead of from a well-developed hydrocaulus. The hydroid cannot be assigned to any presently known genus or species, and is described and named here.

Family Clavidae McCrady, 1859b
Turritopsoides, new genus

Diagnosis.—Hydroid colonies mostly stolonial, infrequently with an irregular branch given off from a hydranth pedicel. Branch, when present, adnate to pedicel over part of its length. Perisarc of moderate thickness on hydrorhiza and pedicel, extending up over basal third of hydranth as a thin film. Hydranths elongate, tubular to clavate, monomorphic. Tentacles filiform,

numerous, scattered. Hypostome proboscis-like to dome-shaped. Nematophores absent.

Gonophores fixed sporosacs, covered with sheath of perisarc, arising via short stalks from hydrorhiza or hydranth pedicel; male gonophores pyriform; female gonophores almost spherical, spadix branched, clasping embryos.

Type species.—*Turritopsoides brehmeri*, n. sp., designated herein.

Etymology.—The generic name, derived from a combination of the generic name *Turritopsis* and the Greek suffix *-oides* (like), reflects the superficial resemblance of the genus to *Turritopsis*. The gender of the name is masculine.

Turritopsoides brehmeri, new species
Figs. 1, 2

Material examined.—Belize: "The Lair" at Twin Cays, on *Thalassia testudinum*, depth 2 m, water temperature 24°C, 8 Feb 1987.—Holotype: one colony with female gonophores, Royal Ontario Museum, Invertebrate Zoology (ROMIZ), ROMIZ B930.—Paratypes: one colony with male gonophores, ROMIZ B931; one colony without gonophores, ROMIZ B932.



Fig. 1. *Turritopsoides brehmeri*, n. gen., n. sp.: a, Holotype, with female gonophore, ROMIZ B390; b, Paratype, with male gonophores, ROMIZ B391. Scale line equals 1 mm.

Description.—Colonies stolonial, or infrequently with a branch arising from the primary pedicel; arising from a creeping, reticular hydrorhiza. When present, branch adnate to pedicel for a short distance at origin, curved outwards and becoming free distally. Pedicels short, up to 4 mm high

from insertion with hydrorhiza to hydranth base. Perisarc of moderate thickness on hydrorhiza and pedicel; clear to straw-colored; occasionally creased and wrinkled but with no distinct annulations; increasing gradually in diameter distally, diameter about 0.1 mm at proximal end, 0.2 mm at distal end,

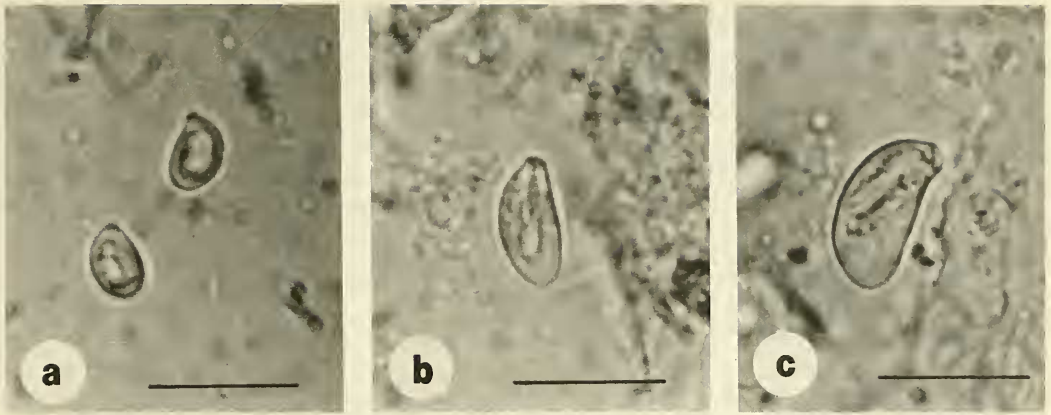


Fig. 2. Preserved nematocysts of *Turritopsoides brehmeri*, n. gen., n. sp.: a, Desmonemes; b, Small heterotranchous microbasic eurytele; c, Large heterotranchous microbasic eurytele. Scale lines equal 10 μm .

enclosing a much narrower tube of coenosarc up to base of hydranth; extending upward over proximal third of hydranth base as a thin, closely adhering film. Hydranths elongate, tubular to clavate, occasionally somewhat dilated distally, reaching 4 mm long from base to tip of hypostome, about 0.3 mm wide when expanded. Tentacles filiform, up to 35 or more, scattered over distal $\frac{1}{3}$ – $\frac{1}{2}$ of extended hydranth, those at distal end longer and stouter than those more proximal. Hypostome prominent, proboscis-like to dome-shaped. Nematophores absent. Living hydranths white, with red endoderm.

Gonophores fixed sporosacs, arising via short stalks from hydrorhiza or hydranth pedicels, covered with smooth, thin perisarc. Female gonophores nearly spherical, about 0.6 mm high and wide, with branched spadix curving over embryos, each gonophore with three developing embryos. Male gonophores pyriform, 0.8–0.9 mm high, 0.5 mm wide, containing dense mass of spermatogenic tissue and sperm.

Nematocysts—

desmonemes (on hydranths, female gonophores): 5.4–5.7 μm \times 3.7–3.8 μm (undischarged)

small heterotranchous microbasic euryteles (on hydranths, male gonophores, female

gonophores): 8.5–9.4 μm \times 4.0–4.5 μm (undischarged)

large heterotranchous microbasic euryteles (on hydranths, male gonophores, female gonophores): 10.4–11.3 μm \times 4.8–5.6 μm (undischarged)

Etymology.—The specific name honors Dr. Morris L. Brehmer, a mentor who kindly made it possible for me to pursue my interest in the taxonomy of hydrozoans two decades ago in Virginia.

Discussion.—In having elongate and generally clavate hydranths with scattered filiform tentacles, and branches (when present) adnate to the pedicels for a varying distance basally, *Turritopsoides* is related to a group of genera, including *Corydendrium* Van Beneden, 1844, *Turritopsis* McCrady, 1859a, and possibly *Tubiclava* Allman, 1863, in the family Clavidae McCrady, 1859b.

Turritopsoides, and its single species *T. brehmeri*, can be distinguished from other taxa in the Clavidae (see Bouillon 1985, Calder 1988) by the location and morphology of the gonophores and by colony form. Unlike *Turritopsis* McCrady, 1859a, gonophores are fixed sporosacs rather than free medusae. Gonophores are not enclosed within the perisarc of the hydrocaulus and branches, as in *Corydendrium* Van Beneden, 1844. In *Hataia* Hirai & Yamada, 1965,

gonophores occur among the tentacles of solitary, naked hydranths. Gonophores occur only on the hydrorhiza in *Rhizogeton* L. Agassiz, 1862, in clusters on large hydranths in *Clava* Gmelin, 1790, presumably in clusters on the hydranths in *Tubiclava* Allman, 1863, and on the hydrocaulus and branches in *Cordylophora* Allman, 1844. *Merona* Norman, 1865, is the only clavid genus having gonophores on gonozooids; furthermore, it is the only known representative of the Clavidae to have nematophores. The nominal genus *Oceania* Péron & Lesueur, 1810, customarily included in the Clavidae, is of uncertain identity. *Oceania* originally included species of medusae now referred to several different families, and attempts to redefine and restrict the genus according to the useage of Kölliker (1853) are not in accordance with provisions of the International Code of Zoological Nomenclature. *Oceania armata* Kölliker, 1853, was designated type species of the genus by Mayer (1910), but the designation is invalid because *O. armata* was not one of the originally included species. In any event, *Turritopsoides* differs from *Oceania* sensu Kölliker in having fixed sporosacs instead of free medusae.

Turritopsis, *Corydendrium*, and *Cordylophora* also differ from *Turritopsoides* in having colonies with a distinct, typically branched hydrocaulus. Unlike *Cordylophora*, there are no distinct annulations in the perisarc of the pedicels, hydrocaulus, or branches of *T. brehmeri*, and its hydranths are elongate and clavate rather than fusiform.

Among those clavids with stolonial colonies, *Turritopsoides brehmeri* most closely resembles species of *Tubiclava* and *Rhizogeton*. It differs from *Tubiclava* in gonophore location, and from *Rhizogeton* in having hydranths arising from well developed pedicels instead of from the hydrorhiza. Although similar to *Rhizogeton ezoense* Yamada, 1964, from Japan in general appearance, hydranths of the latter “. . .

are not clearly separated from hydrocaulus” (Yamada 1964). Gonophores also appear to be restricted to the hydrorhiza in *R. ezoense*, instead of occurring on hydrorhiza and pedicels. In addition, Yamada (1964) noted that the female gonophores of *R. ezoense* bear 10–13 eggs (or embryos), whereas three are present in *Turritopsoides brehmeri*.

Acknowledgments

I am indebted to Dr. Klaus Ruetzler, Department of Invertebrate Zoology, Smithsonian Institution, for inviting me to study the hydroids of the mangle at Twin Cays, and for arranging financial and logistical support. I also thank Dr. P. F. S. Cornelius, British Museum (Natural History), for his comments on the manuscript. This is contribution no. 240 from the Caribbean Coral Reef Ecosystems (CCRE) Program, Smithsonian Institution.

Literature Cited

- Agassiz, L. 1862. Contributions to the natural history of the United States of America. Vol. IV. Little, Brown and Company, Boston. 380 pp.
- Allman, G. J. 1844. Synopsis of the genera and species of zoophytes inhabiting the fresh waters of Ireland.—Annals and Magazine of Natural History 13:328–331.
- . 1863. Notes on the Hydroida. I. On the structure of *Corymorpha nutans*. II. Diagnoses of new species of Tubularidae obtained, during the autumn of 1862, on the coasts of Shetland and Devonshire.—Annals and Magazine of Natural History 11(3):1–12.
- Bouillon, J. 1985. Essai de classification des hydro-polypes-hydroméduses (Hydrozoa-Cnidaria).—Indo-Malayan Zoology 1(1985):29–243.
- Calder, D. R. 1988. Shallow-water hydroids of Bermuda: The Athecatae.—Royal Ontario Museum, Life Sciences Contributions 148, 107 pp.
- Gmelin, J. F. 1790. Caroli a Linne, systema naturae per regna tria naturae, secundum classes, ordines, genera, species, cum characteribus, differentiis, synonymis, locis. Editio decima tertia, aucta reformata. Tomus 1, Pars 6.—Lipsiae, pp. 3021–4120.
- Hirai, E., & M. Yamada. 1965. On a new athecate hydroid *Hataia parva*, n. gen., n. sp.—Bulletin of the Marine Biological Station of Asamushi 12:59–62.

- Kölliker, A. 1853. Die Schwimmpolypen oder Siphonophoren von Messina.—Wilhelm Engelmann, Leipzig. 96 pp.
- Mayer, A. G. 1910. Medusae of the world. Vol. I. The hydromedusae.—Carnegie Institution of Washington, Publication 109:1–230.
- McCrary, J. 1859a. Description of *Oceania (Turritopsis) nutricula* nov. spec. and the embryological history of a singular medusan larva, found in the cavity of its bell.—Proceedings of the Elliott Society of Natural History of Charleston, South Carolina 1:55–90.
- . 1859b. Gymnophthalmata of Charleston Harbor.—Proceedings of the Elliott Society of Natural History of Charleston, South Carolina 1:103–221.
- Norman, A. M. 1865. On *Merona*, an undescribed genus of British Hydrozoa.—Annals and Magazine of Natural History 15(3):261–262.
- Péron, F., & C. A. Lesueur. 1810. Tableau des caractères génériques et spécifiques de toutes les espèces de meduses connues jusqu'à ce jour.—Annales du Muséum d'Histoire Naturelle 14:325–366.
- Van Beneden, P. J. 1844. Sur les genres Eleuthérie et Synhydre.—Bulletins de l'Académie Royale des Sciences et Belles-Lettres de Bruxelles 11:305–314.
- Yamada, M. 1964. *Rhizogeton ezoense* n. sp., a new hydroid from Hokkaido, Japan.—Journal of the Faculty of Science, Hokkaido University Zoology 15(6):395–397.

Department of Invertebrate Zoology,
Royal Ontario Museum, 100 Queen's Park,
Toronto, Ontario M5S 2C6, Canada and
Department of Zoology, University of To-
ronto, Toronto, Ontario M5S 1A1, Canada.